

REMARKS/ARGUMENTS

Claims 1-9, 11-18, 20 and 21-25 are pending. By this Amendment, claim 10 is cancelled without prejudice or disclaimer, claim 1 is amended, and new claims 22-25 are presented. Support for the amendments to claim 1 and new claims 22-25 can be found, for example, the present specification at page 4, lines 23 to 25, and in previously presented claims 1, 5, 9 and 10. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

New Matter

The March 26, 2010 Advisory Action asserts that "it is not evident that the proposed claim invention of a range of amount of the 2,4'MDI isomer without the requirement for the presence of some amount of the 4,4'MDI isomer was provided for by applicants' originally filed supporting disclosure." *See* March 26, 2010 Advisory Action, page 2. Applicants respectfully disagree with this assertion.

Claim 1 is amended to recite "the polyisocyanate component comprises at least 30 mol% of 2,4'-methylene-bis(phenylisocyanate) isomer (2,4'MDI)" (emphasis added). Applicants submit that this feature is fully supported by the present specification. In particular, the present specification discloses that:

Moreover, the polyisocyanate component may comprise at least one component of functionality at least equal to 2 with a low molecular weight chosen from para-phenylene diisocyanate, trans-1,4-cyclohexane diisocyanate, 3-isocyanate-methyl-3,3,5-trimethylcyclohexyl isocyanate, 1,5-naphthalene-diisocyanate, methylene bis(phenylisocyanate) (MDI) and its isomers, 4,4'-methylene bisphenylisocyanate (4,4'-MDI), 2,4-methylene-bis(phenylisocyanate) (2,4'-MDI), 2,2'-methylene-bis(phenylisocyanate) (2,2'-MDI), raw or polymeric MDI, 2,4-toluene diisocyanate (TDI) and 2,6-toluene diisocyanate (2,6-TDI). Preferably, it comprises predominantly methylene-bis-4,4'- phenylisocyanate (MDI), optionally as a mixture with other polyisocyanates, such as those mentioned above. It proves to be most particularly advantageous for this compound

to contain a significant proportion, for example at least 30 mol%, of 2,4' isomer, which breaks the crystallinity of the hard segments of the polyurethane.

*See* present specification, page 5, lines 26 to 31. Applicants further direct attention to the Examples of the present specification, which employ a polymeric MDI having a percentage of free isocyanate of 27.8% and a 2,4' isomer content of about 70 mol%, and a polymeric MDI having a percentage of free isocyanate of 31.2% and a 2,4' isomer content of about 35 mol%. *See* present specification, page 9, lines 1 to 6, Table 1. The foregoing descriptions in the present specification unambiguously indicate that the polyisocyanate component may include at least 30 mol% of 2,4'-methylene-bis(phenylisocyanate) isomer, without regard to the presence or absence of 4,4'-methylene-bis(phenylisocyanate) isomer.

In the sentence "[i]t proves to be most particularly advantageous for this compound to contain a significant proportion, for example at least 30 mol%, of 2,4' isomer, which breaks the crystallinity of the hard segments of the polyurethane" in the above-quoted passage from the present specification, the "compound" is the polyisocyanate component, not the "methylene-bis-4,4'- phenylisocyanate (MDI)," in the preceding sentence. The assertion in the Advisory Action that the present specification only supports a polyisocyanate component comprising at least 30 mol% of 2,4'MDI when some amount of 4,4'MDI isomer is also present, apparently relies on an unduly narrow and inconsistent reading of the present specification.

Applicants submit that the feature of "the polyisocyanate component comprises at least 30 mol% of 2,4'-methylene-bis(phenylisocyanate) isomer (2,4'MDI)" in amended claim 1 is fully supported by the specification as filed.

Rejection Under 35 U.S.C. §103

The Office Action rejects claims 1-18, 20 and 21 under 35 U.S.C. §103(a) over U.S. Patent No. 4,264,743 to Maruyama et al. ("Maruyama") in view of U.S. Patent No. 4,386,166 to Peterson et al. ("Peterson"). By this Amendment, claim 10 is cancelled, rendering the rejection moot as to that claim. As to the remaining claims, Applicants respectfully traverse the rejection for at least the reasons set forth in the March 12, 2010 Amendment and reiterated below.

Claim 1 recites "[a] water-impermeable flexible polyurethane foam obtained by: reacting a polyol component with at least one polyisocyanate component in the presence of a foaming agent; wherein: the polyol component comprises at least one hydrophobic polyol; the polyisocyanate component comprises at least 30 mol% of 2,4'-methylene-bis(phenylisocyanate) isomer (2,4'MDI); the foam has a compression force of less than or equal to 12 kPa for 50% compression; and a molar ratio of isocyanate functional groups to a total of alcohol functional groups and reactive functional groups (the index) is less than 0.90" (emphasis added). Maruyama and Peterson do not disclose or suggest such a foam.

As indicated above, claim 1 requires a polyisocyanate component including at least 30 mol% of 2,4'-methylene-bis(phenylisocyanate) isomer (2,4'MDI). The November 12, 2009 Office Action relies on Maruyama for its disclosure of a foam composition prepared using, *inter alia*, particular isocyanates. *See* November 12, 2009 Office Action, page 2; Maruyama, column 5, lines 39 to 49. However, Maruyama does not disclose the particular isocyanate recited in claim 1 (2,4'-methylene-bis(phenylisocyanate) isomer), much less that such MDI isomer should be used in an amount of at least 30 mol%.

Maruyama discloses using several isocyanates. However, 2,4'MDI is not among the isocyanates identified in Maruyama. In fact, Maruyama appears to disclose only polymeric

MDI. *See Maruyama*, column 5, line 46. Moreover, there is nothing in *Maruyama* that would have led a skilled artisan to expect that selecting a particular amount of 2,4'MDI (at least 30 mol%) would have any effect on a foam obtained using such isocyanate. As is well-settled, a particular parameter must first be recognized as a result-effective variable before the determination of workable ranges can be said to be an obvious variation. *See, e.g.*, MPEP §2144.05.II.B (citing *In re Antonie*, 195 U.S.P.Q. 6 (C.C.P.A. 1977)). The Office Action fails to identify, in any of the cited references, recognition that the amount of a particular isocyanate (or 2,4'MDI in particular) is a result-effective variable. Absent such recognition, one of ordinary skill in the art would not have had a reasonable expectation of success upon modifying the composition of *Maruyama* as would be required to obtain the foam of claim 1.

As discussed in the present specification, employing at least 30 mol% of 2,4'MDI to prepare the polyurethane foam of claim 1 breaks the crystallinity of hard segments of the polyurethane. *See* present specification, page 5, lines 28 to 31. *Maruyama* does not disclose or suggest using this particular amount of this particular isocyanate and does not recognize the benefits stemming therefrom.

As *Maruyama* fails to disclose or suggest a polyisocyanate component including at least 30 mol% of 2,4'-methylene-bis(phenylisocyanate) isomer (2,4'MDI), *Maruyama* fails to disclose or suggest each and every feature of claim 1.

For the reasons discussed above, *Maruyama* fails to disclose or suggest each and every feature of claim 1. *Peterson* does not remedy the deficiencies of *Maruyama*. *Peterson* is cited for its alleged disclosure of manufacturing foams by casting on a conveyor belt and passing the belt through an oven. *See* November 12, 2009 Office Action, page 4. However, *Peterson*, like *Maruyama* fails to disclose or suggest a polyisocyanate component including at least 30 mol% of 2,4'-methylene-bis(phenylisocyanate) isomer (2,4'MDI). Accordingly, the combination of references fails to disclose or suggest each and every feature of claim 1.

As explained, claim 1 would not have been rendered obvious by Maruyama and Peterson. Claims 2-9, 11-18, 20 and 21 depend from claim 1 and, thus, also would not have been rendered obvious by Maruyama and Peterson. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

New Claims

By this Amendment, new claims 22-25 are presented. New claims 22-25 require each of the features of claim 1 (as well as additional features) and, thus, new claims 22-25 are believed to be patentable for at least the reasons discussed above with respect to claim 1.

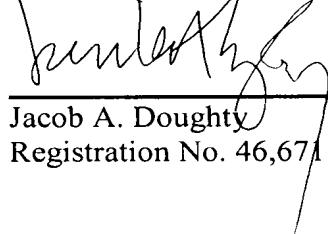
Conclusion

For the foregoing reasons, Applicants submit that claims 1-9, 11-18, 20 and 21-25 are in condition for allowance. Prompt reconsideration and allowance are respectfully requested.

Respectfully submitted,

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